#4

N-TERMINAL AMINOACID SEQUENCES

Position	A	B	C
01			LEU
02			ALA
03			VAL
04			PRO
05		ALA	ALA
06		SER	SER
07		---	ARG
08	---**	---	ASN
09	GLN	GLN	GLN
10	SER	SER	SER
11	SER	SER	SER
12	---	---	GLY
13	ASP	ASP	ASP
14	THR	THR	THR
15	VAL	VAL	VAL
16	ASP	ASP	ASP
17	GLN	GLN	
18		GLY	
19		TYR	
20		GLN	
21		ARG	
22		PHE	
23		SER	
24		GLU	
25		THR	
26		SER	
27		HIS	
28		LEU	
29		ARG	
30		(GLY)*	
31		GLN	
32		TYR	
33		ALA	
34		PRO	
35		PHE	
36		PHE	
37		(ASP)	
38		LEU	
39		ALA	

FIG. 1 A

PEPTIDE AMINOACID SEQUENCES

Position	A	B	C	D	E
01	GLN	(TRP)*	MET	ALA	VAL
02	———**	SER	MET	SER	VAL
03	GLN	PHE	GLN	SER	ASP
04	ALA	ASP	CYS	ALA	———
05	GLU	THR	GLN	GLU	ARG
06	GLN	ILE	ALA	LYS	PHE
07	GLU	SER	GLU	GLY	PRO
08	PRO	THR	GLN	TYR	TYR
09	LEU	SER	GLU	ASP	THR
10	VAL	THR	PRO	LEU	GLY
11	(ARG)	VAL	LEU	VAL	———
12	VAL	ASP	VAL	VAL	ALA
13	LEU	THR	ARG		
14	VAL	LYS	VAL		
15	ASN	LEU	LEU		
16	(ASP)	SER	VAL		
17	(ARG)	PRO	ASN		
18	(VAL)	PHE	ASP		
19	VAL	(CYS)	ARG		
20	PRO	(ASP)			
21		LEU			
22		PHE			
23		THR			

FIG. 1B

N-TERMINUS 100KD PROTEIN

Position	
01	VAL
02	VAL
03	ASP
04	GLU
05	ARG
06	PHE
07	PRO
08	TYR
09	THR
10	GLY

FIG. 1C

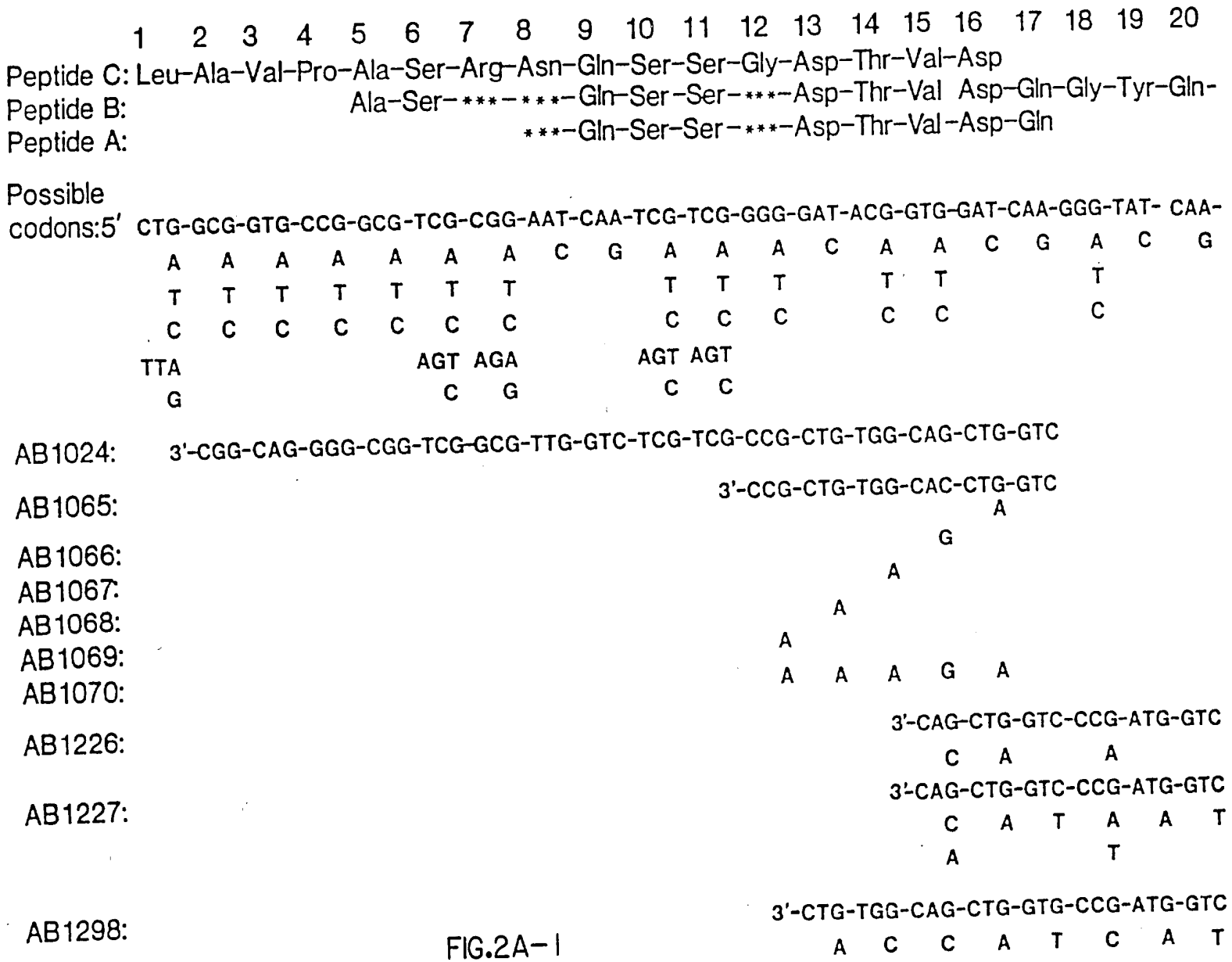


FIG.2A-1

(phytase N–terminus, continued)

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Peptide B:	(Arg)	Phe	Ser	Glu	Thr	Ser	His	Leu	Arg	(Gly)	Gln	Tyr	Ala	Pro	Phe	Phe	(Asp)	Leu	Ala
	CGG-	TTT-	TCG-	GAG-	ACG-	TCG-	CAT-	CTG-	CGG-	GGG-	CAG-	TAT-	CGC-	CCG-	TTT-	TTT-	GAT-	CTG-	GCG
	T	A	C	A	A	A	A	C	A	A	A	C	C	A	C	C	C	A	A
	T		T		T	T		T	T	T			T	T				T	T
	C		C		C	C		C	C	C			C	C				C	C
	AGG		AGT			AGT		TTG	AGG									TTG	
	A		C			C		A	A									A	
AB1388:										3'-CCG-	GTC-	ATG-	CGG-	GGG-	AAG-	AAG-	CTG-	GA	
										C			C	C				A	

FIG.2A–2

```
          1   2   3   4   5   6   7   8   9   10  11      12  13  14  15
Peptide A: (Gln- ? -Gln-Ala-Glu-Gln-Glu-Pro-Leu-Val-(Ser/Arg)-Val-Leu-Val-(Asp/Asn)

          CAG-???-CAG-GCG-GAG-CAG-GAG-CCG-CTG-GTG-(TCG/CGG)-GTG-CTG-GTG-(GAT/AAT)
            A       A   A   A   A   A   A   A   A   A   A   A   A   A   C   C
                            T                   T   T   T   T   T   T   T
                            C                   C   C   C   C   C   C   C
                                            TTG     AGT AGG     TTG
                                              A       C           A

AB1295:             3'-GTC.CGC.CTC.GTC. CTC. GGG.GAG.CA-5'
                          T   G   T   T   T   C A C

          16          17      18  19  20  21  22
          -Asp/Thr/Arg-(Arg/Val)-Val-Pro-(Pro)-Met-Gly

          -GAT/ACG/CGG-(CGG/GTG)-GTG-CCG-(CCG)-ATG-GGG
           C   A   A   A   A   A   A   A       A
                   T   T   T   T   T   T       T
                   C   C   C   C   C   C       C
                 AGG AGG
                   A   A
```

FIG.2B-1

```
                1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18
Peptide B:  (Trp)-Ser-Phe-Asp-Thr-Ile-Ser-Thr- Ser-Thr-Val-Asp-Thr-Lys-Leu-Ser-Pro-Phe-

            (TGG)-TCG-TTT-GAT-ACG-ATA-TCG-ACG-TCG-ACG-GTG-GAT-ACG-AAG-CTG-TCG-CCG-TTT-
                  A   C   C   A   T   A   A   A   A   A   C   A   A   A   A   A   C
                  T           T   C   T   T   T   T   T       T       T   T   T
                  C           C       C   C   C   C   C       C       C   C   C
                AGT                   AGT     AGT                       TTG AGT
                  C                   C       C                           A   C

AB1296 :          3'-AAG. CTG. TGC. TAG. AGG. TGG. AGG. TGG. CAC. CTG. TGC. TTC-5'
                                         TCC     C TCC     C

AB1297:  3'-GGC.AAG.
               G

                19  20  21  22  23  24  25  26  27  28  29      30  31      32  33
(Cys)-(Asp)-Leu-Phe-Thr-(Thr)-(Asp)-(Glu)-(Cys)-(Ile)-(Thr/Asn)-(Tyr)-(Arg/Gly)-(Tyr)-Leu

(GTG)-(GAT)- CTG- TTT- ACG-(ACG)-(GAT)- GAG) - (TGT)-(ATA)-(ACG/AAT) - (TAT)-(CGG/GGG)-(TAT)-CTG
  C   C     A   C   A   A   C   A   C   T   A   C   C   A   A   C   A
            T       T   T                   C   T       T   T       T
            C       C   C                       C       C   C       C
          TTG                                             AGG       TTG
            A                                               A         A

(ACG). (CTG). GAG.  AAG. TGC. (TGC). (CTG). (CTC).  (ACG).(TAG). (T)-5'
               C        G   G
```

FIG.2B-2

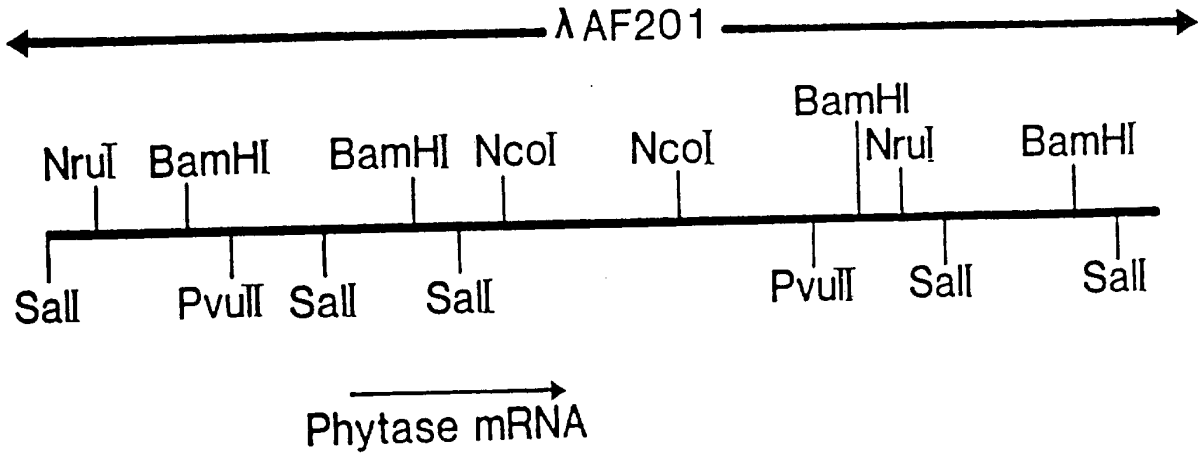
```
1    2    3    4    5    6    7   8    9    10   11   12   13   14   15   16   17   18   19   20   21   22   23
Phe-Ser-Tyr-Gly-Ala-Ala-Ile-Pro-Gln-Ser-Thr-Gln-Glu-Lys-Gln-Phe-Ser-Gln-Glu-Phe-Arg-Asp-Gly

5'-TTT-TCG-TAT-GGG-GCG-GCG ATA-CCG-CAG-TCG-ACG-CAG-GAG-AAG-CAG-TTT-TCG-CAG-GAG-TTT-CGG-GAT- GGG
     C    A    C    A    A    A    T    A    A    A    A    A    A    A    A    C    A    A    A    C    A    C    A
          T         T    T    T    C    T         T    T                             T                   T         T
          C         C    C    C         C         C    C                             C                   C         C
         AGT                                     AGT                                 AGT                 AGG
          C                                       C                                   C                   C

AB1025: 3'-ATG-CCG-CGG-CGG-TAG-GGG-GTC-TCG-TGG-GTC-CTC-TTC-GTC-AAG-TCG-GTC-CTC-AAG-GC-5
AB1026:                                             3'-GTC-CTC-TTC-GTC-AAG-TCG-GTC-CTC-AAG-GC-5
                                                                T               AGA        T
                                                                                 C

AB1027: 3'-ATG-CCG-GCG-CGC-TAA-GGC-GTC-5'
                A    T    T    G    G
                     A    A
                     G    G
```

FIG.3



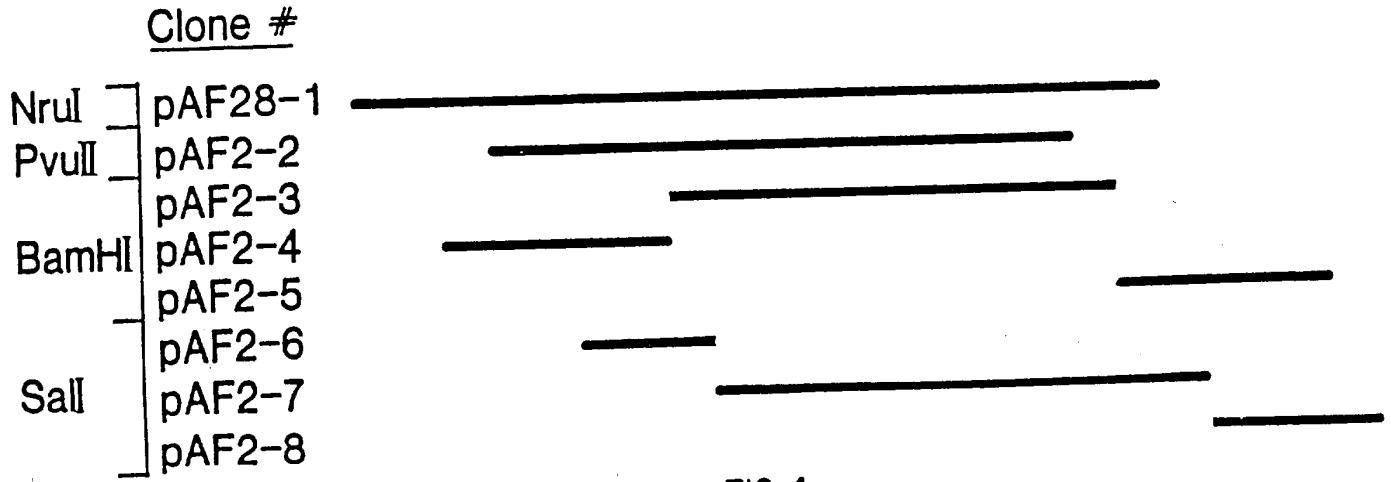


FIG.4

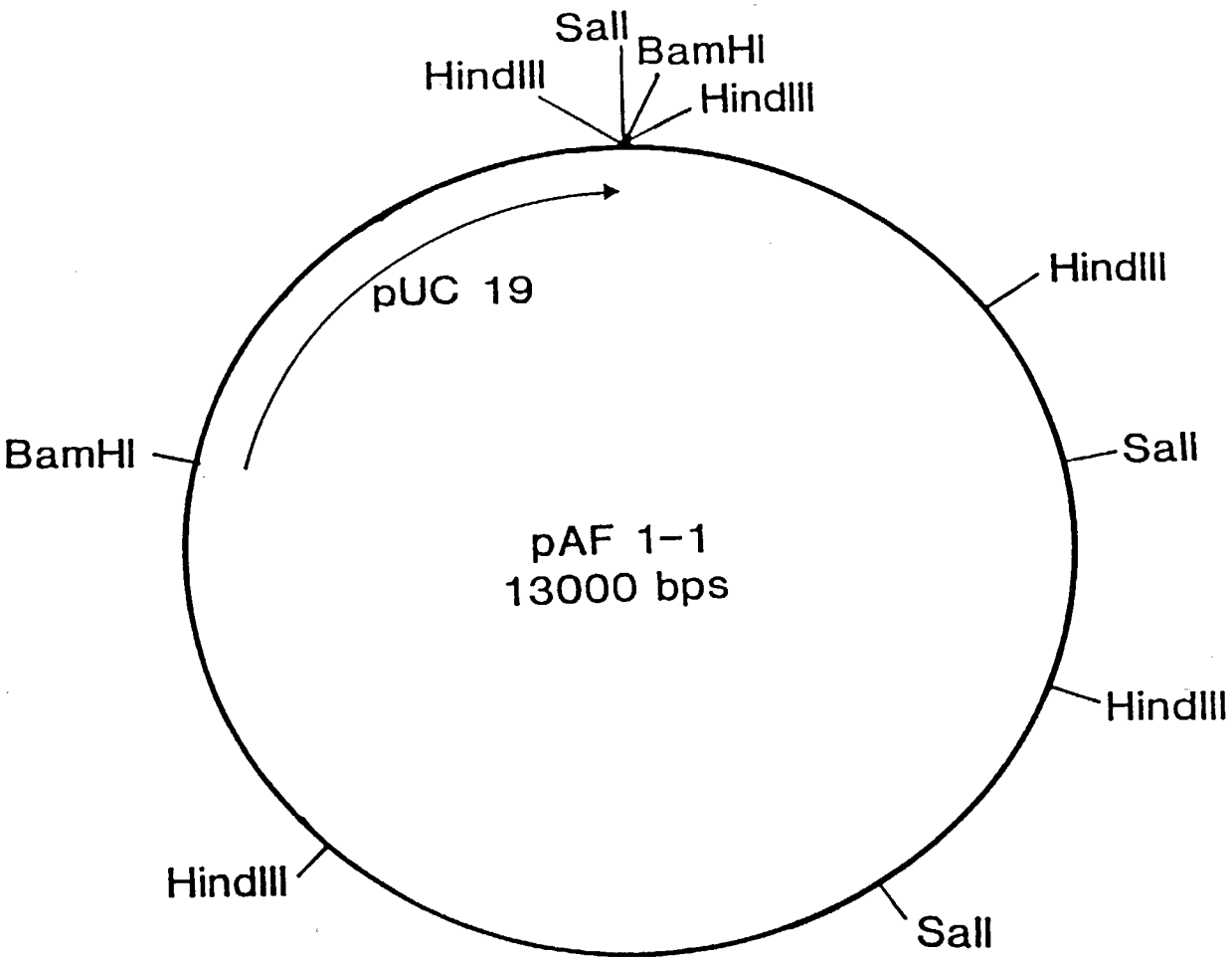


FIG.5

```
GTCGACTTCCCGTCCTATTCGGCCTCGTCCGCTGAAGATCCATCCCACCA
 SalI

TTGCACGTGGGCCACCTTTGTGAGCTTCTAACCTGAACTGGTAGAGTATC    100

ACACACCATGCCAAGGTGGGATGAAGGGGTTATATGAGACCGTCCGGTCC

GGCGCGATGGCCGTAGCTGCCACTCGCTGCTGTGCAAGAAATTACTTCTC    200

ATAGGCATCATGGGCGTCTCTGCTGTTCTACTTCCTTTGTATCTCCTGTC
          translation start

TGGGTATGCTAAGCACCACAATCAAAGTCTAATAAGGACCCTCCCTTCCG    300
   start<----------------------------------------

AGGGCCCCTGAAGCTCGGACTGTGTGGGACTACTGATCGCTGACTATCTG
--intron----------------------------------------

TGCAGAGTCACCTCCGGACTGGCAGTCCCCGCCTCGAGAAATCAATCCAG    400
->end

TTGCGATACGGTCGATCAGGGGTATCAATGCTTCTCCGAGACTTCGCATC

TTTGGGGTCAATACGCACCGTTCTTCTCTCTGGCAAACGAATCGGTCATC    500

TCCCCTGAGGTGCCCGCCGGATGCAGAGTCACTTTCGCTCAGGTCCTCTC

CCGTCATGGAGCGCGGTATCCGACCGACTCCAAGGGCAAGAAATACTCCG    600

CTCTCATTGAGGAGATCCAGCAGAACGCGACCACCTTTGACGGAAAATAT

GCCTTCCTGAAGACATACAACTACAGCTTGGGTGCAGATGACCTGACTCC    700

CTTCGGAGAACAGGAGCTAGTCAACTCCGGCATCAAGTTCTACCAGCGGT

ACGAATCGCTCACAAGGAACATCGTTCCATTCATCCGATCCTCTGGCTCC    800

AGCCGCGTGATCGCCTCCGGCAAGAAATTCATCGAGGGCTTCCAGAGCAC

CAAGCTGAAGGATCCTCGTGCCCAGCCCGGCCAATCGTCGCCCAAGATCG    900
          BamHI

ACGTGGTCATTTCCGAGGCCAGCTCATCCAACAACACTCTCGACCCAGGC

ACCTGCACTGTCTTCGAAGACAGCGAATTGGCCGATACCGTCGAAGCCAA   1000
```

FIG.6A

```
TTTCACCGCCACGTTCGTCCCCTCCATTCGTCAACGTCTGGAGAACGACC

TGTCCGGTGTGACTCTCACAGACACAGAAGTGACCTACCTCATGGACATG   1100

TGCTCCTTCGACACCATCTCCACCAGCACCGTCGACACCAAGCTGTCCCC
                               SalI

CTTCTGTGACCTGTTCACCCATGACGAATGGATCAACTACGACTACCTCC   1200

AGTCCTTGAAAAAGTATTACGGCCATGGTGCAGGTAACCCGCTCGGCCCG

ACCCAGGGCGTCGGCTACGCTAACGAGCTCATCGCCCGTCTGACCCACTC   1300

GCCTGTCCACGATGACACCAGTTCCAACCACACTTTGGACTCGAGCCCGG

CTACCTTTCCGCTCAACTCTACTCTCTACGCGGACTTTTCGCATGACAAC   1400

GGCATCATCTCCATTCTCTTTGCTTTAGGTCTGTACAACGGCACTAAGCC

GCTATCTACCACGACCGTGGAGAATATCACCCAGACAGATGGATTCTCGT   1500

CTGCTTGGACGGTTCCGTTTGCTTCGCGTTTGTACGTCGAGATGATGCAG

TGTCAGGCGGAGCAGGAGCCGCTGGTCCGTGTCTTGGTTAATGATCGCGT   1600

TGTCCCGCTGCATGGGTGTCCGGTTGATGCTTTGGGGAGATGTACCCGGG

ATAGCTTTGTGAGGGGGTTGAGCTTTGCTAGATCTGGGGGTGATTGGGCG   1700

GAGTGTTTTGCTTAGCTGAATTACCTTGATGAATGGTATGTATCACATTG
translation stop

CATATCATTAGCACTTCAGGTATGTATTATCGAAGATGTATATCGAAAGG   1800

ATCAATGGTGACTGTCACTGGTTATCTGAATATCCCTCTATACCTCGTCC

CACAACCAATCATCACCCTTTAAACAATCACACTCAACGCACAGCGTACA   1900

AACGAACAAACGCACAAAGAATATTTTACACTCCTCCCCAACGCAATACC

AACCGCAATTCATCATACCTCATATAAATACAATACAATACAATACATCC   2000
```

FIG.6B

ATCCCTACCCTCAAGTCCACCCATCCTATAATCAATCCCTACTTACTTAC
TTCTCCCCCTCCCCCTCACCCTTCCCAGAACTCACCCCCGAAGTAGTAAT 2100
AGTAGTAGTAGAAGAAGCAGACGACCTCTCCACCAATCTCTTCGGCCTCT
TATCCCCATACGCTACACAAAACCCCCACCCCGTTAGCATGCACTCAGAA 2200
AATAATCAAAAATAACTAAGAAGGAAAAAAAAGAAGAAGAAAGGTTACAT
ACTCCTCTCATACAAACTCCAAGACGTATACATCAAGATGGGCAATCCCA 2300
CCATTACTGATATCCATCTATGAACCCATTCCCATCCCACGTTAGTTGAT
TACTTTACTTAGAAGAAGAAAAAGGGAAGGGAAGGGAAAGAAGTGGATGG 2400
GATTGAGTTAGTGCTCACCGTCTCGCAGCAAGTTTATATTCTTTTGTTTG
GCGGATATCTTTCACTGCTCCTGCTGGACGTTGTCACGGGGTGGTAGTGG 2500
TTGGCGGTGGTGAGGGTCCATGATCACTCTTGGTTTGGGGGGTTGTTGTT
GTCGTTGTTGTTGTTGTTGGGTGGGCATTTTCTTTTCTTCACTTGGGGAT 2600
TATTATTTGGAATTGGTTAGTTTGAGTGAGTGGGTAATATTGAATGGGTG
ATTATTGGGAATGAAGTAGATTTGGCTATGAATGGTTGATGGGATGGAAT 2700
GAATGGATGGATGAATAGATGGAGGCGGAAAAGTCAGGTGGTTTGAGGTT
CGGATTATTATCTTTGTGCCTGAGGCATCACTCTCCATCTATGTTGTTCT 2800
TTCTATACCGATCTACCAGAGCTAAGTTGACTGATTCTACCACAGTGCAC
AATAAGTATGTACTTATTTCATTTAGAGTATTTAGATTAACCCGCTGTGC 2900
TATTTGCCGTAGCTTTCCACCCAATTTCGAAGTTCGAAGAATTAAAACTC
ATCCTACAGTACAGAATAGAAGTAAAAGGAGAAGAGAAAAACAAGATAAT 3000

FIG.6C

ACAACCAGTCCAGGTCCATTCTAGATCTCGAATGACCACCAAATAAGAAA

GCAACAAGCAAGTAAGCAAAGCATAAGTCTAAATGAACGCCAATAACTTC 3100

ATCGCCTGCCTTTGAAACTGAACGCTATGCACGAATGGCTCGAAATGATT

CCCTTAACTCCGTAGTATTGAGAGTGAGAGGAAAAGAAAAAAAGAGACAG 3200

AAAAGCTGACCATGGGAAAGAAGCATGATCAGTCGGGAATGGATCTGCGG

GTTGAGATAGATATGAGTTGCCTCGCAGATCCGGTGACAAGATAAGAGAA 3300

TTGGGAGATGTGATCAGCCACTGTAACTTCATCAAGCATCGACATTCAAC

GGTCGGGTCTGCGGGTTGAGATGCAAGTTGAGATGCCACGCAGACCCGAA 3400

CAGAGTGAGAGATGTGAGACTTTTGAACCACTGTGACTTCATCAAGCATC

AAAACACACTCCATGGTCAATCGGTTAGGGTGTGAGGGTTGATATGCCAG 3500

GTTCGATGCCACGCAGACCCGAACCGACTGAGAAATATGAAAAGTTGGAC

AGCCACTTCATCTTCATCAAGCGTAAAACCCCAATCAATGGTAAATCGAA 3600

AACGAATCTGCGGGCTGATGTGGAAATGAGACGAATGCCTCGCAGATTCG

AAGACACGTAAATCGAGATGAACAATCACTTTAACTTCATCAAAGCCTTA 3700

AATCACCCAATGGCCAGTCTATTCGGGTCTGCGGGTTGAGGTTCCTGTTG

AGATGCCACGCAGACTGCGAACATGCGATGCATTATAAGTTGGACGAGTG 3800

TAGACTGACCATTGATAACCGAGATAAACAATCACTTCAACTTCATCAAA

GCCTTAAATCACTCAATGGCCAGTCTGTTTGCGGTCTGCGGGCTGATACC 3900

CAAGTTGCGATGCCACGCAGACTGCAAACATTGATCGAGAGACGAGAAAA

ACAACGCACTTTAACTTCAACAAAAGCCTTTCAATCAGTCAATGGCCAGT 4000

FIG.6D

CTGTTCGCGGTCTGCGGGCTGATATGCGAGTTGAGGTGCCTCGCAGACCG

CGAACATGCGATGTAATTTCTTAGTTAGACGAGTGCCTGGCCATTGAGAA 4100

ACGAGAGAAACAACCACTTTAACTTCATGAAAGCCTTGAACTACTCAATG

ACCCGTCTGTTGGCGGTCTGCGGGCTGATATTCGAGTTGAGATGCCACGC 4200

AGACCGCCAACATGCGATGTATCATGTAAGTTAGATGAGTGACTGGCCAT

TGAGAAACGAGAGAAACAACCACACTTCATGAGAGCCTTAAATTATTCAA 4300

TGACCAGTCTGTTCACGGTCTGCGGGTTGGTATGCGAGTCGAGGTGCCTC

GCAGACCGCGAACATGCGATGTTTTCGATGGACGAGTGAAGCCTGACGAT 4400

CGAGAACTATCTCAGTTGGGTTGGCCATTCGGCTGGCCGTTGGGTTTAGT

ATTAGGATCGTCAGGTTTGTCCGATGGAACGTTCCGTTTGCGTGCGTTGG 4500

CGCGACGAGCCCTCTCCTCGGCGTGATTCTGAAATTCTGCAATCAGGGCA

GCCGCAGCACGGCGACGGGACGTCCTCCAGGAGCTGTGTTGAAGTTTCGG 4600

GGTGGCGGTCCAGAAGGGGGAGTTACATTAAAAGCCTCATAGATGTCTTT

GGGTGGTTCCGGGGGGCCCATCGCAAGATCTTCTGGAGTTGTGCGTCTGA 4700

TCATCTCTTGAGTGTAATTGCGACGCAGACCGAGCTTCAGGATTTTGGAA

GGGCTGGATCGCTCCTGCTGACTCTTTCCCTCAGCGGGCTTCGTCTCGGC 4800

AGTCTTCATTTCGGCGGGCTGATCTTCCATCTCAGAATGGGATCGCTTTC

TGGTCGCTGCACCCGCTCCTCCCTTCAAGGTCAGCTTGATGCGCAGCGTC 4900

TTGGGCGGCTCAGCTGGTGGAGTTGGTTCCGGCTCTGGCTCCCTCCGGCG

TCGCTTGGGCACTTGAGTAGTCTCTGAGGCTTCGCCGCGGCGCCGTTTGC 5000

FIG 6E

GAGTCGGCTCCTTGGTCTCTTTGGCCTCTTTCACTTCACCTGGACCGTCT

TTCGGGGCGGTTTCATCGTGCTGAGCGATCAAGGTTTGGATGTAGGCAGC 5100

CGGCATCATTCGATCAACGGCAATTCCTCTCTTGCGGGCCTCCTCCCGAG

CCTTGATTGTCGCCTTGACCTCGTCCACGTTTTCGAAGAAGAAAGGCATC 5200

TTGTTATCCTGAGGCAAGTTGCGCTCTCCCATGCGTGGGGATATCCGAAG

ATGCGGTCCTTCTCGAACTGTTCATGAGACTTCAGACGAATTGGAGGCTG 5300

GGGGAGCAATTTGTCTCCGTAGGTGTTGTTAGGGCGGAACCAAGAATAGC

CTTCGCCTACAACGACAAGCTCTTCGCCAAATTTATTTTTTTGGCCTGTA 5400

AAAACGAACCCATCCTCGTCAGTCCACCGGTGCGTCTCGGACGTAGAGAT

TGGCTTACTTATTCCCTCAACGCCGATCTCTGCCTGGGGCTGCGCTTCGG 5500

ATGCGGCCTCGGTCACGGCTCCGCCTCGGACTGCACCGCTGGAGTTTCGG

TCTTCTTCTCCTGCTTCTCCAGGTACTCCTTGCGTAACTCTTCGATCAGC 5600

CTCGGCTTCCGATGACTGCTCAAATTCTGGAGCAACAGCTGCCGCGGCCA

GGTCAAGCAGGCGGTTTGCTAAAACTGCCCATTTTCCATCGACACCTGCC 5700

TCCGACGCCTGTGCAAAACCAGCTGTTTTCGCATTGGCCTGTTTGTTGGC

ACGCGTCTTCTTGACTGCTGCCTTGCCCTTTACTTCCTTGAGAGCAGACT 5800

CTGGCTTAGATGATGGTGCACGGTTTCTGCGGAAGCGCCGCTCAGATTCC

AAAGATTCCATAGCTTTAATGGTAGGCTTTCTGGTTCTTCCAGAAGTGCG 5900

CGCAGCTGACGTAGTGGTTGAGTAGCTGGCAGTTGGGGATCCTGGGCCCT

CATTGGAACCATCAAGACCAAATTTGTTTCCATACATATCAGCATGGTAT 6000

FIG.6F

```
TCAAAAGGAAAACTTTCGCCGTACGGAGTACTGCGTTCGATTCCGGGTGT

ATCCAAGTCGTATCCAGACATGGTGTCGAATTCAGCCTTGCTGTCAAGAG  6100

CAGGGGTACTTTCAATGCTGTCAGCAACCACGCGGCCAAAGGGCGTCTTC

GGGAAAGAAGGTGTTTCAAGAGAAGCGTCATCCACGGCCTGGCTTGCGGC  6200

GTTGATTGCAGACTTTCGAGTAGATCGCTGAGGTCGCGAACTGGTTCGAG

TAGCAACCTGTGAATTGGCAGCCTTGTGACTGCTTCGATTCACTGCAGAG  6300

ACGGAGTAGACTGCACTGATTTGGAATTCTGAGTCGCAGCCATTCTGGAT

TTGCGTTCGGCGCGACGAGATCTCGCAGTCGTGGTACGAGGAGTAGAGCG  6400

AGGCTGCGTAGCAGTGTTGCAAGCTTGGTGCTAGCCTCCTGGGCTTCAGC

AGCTTCAGCAGTGGTGGCAGACGCAGCAGAATTAGCGGAGCTTTATCGGC  6500

TTTGCCGCTCTGAGCGTTGGGAGTAGAAGTGAGAGAAGAGGTAGAGTCCA

CGGAAGAAGTCTTCTCGCTGTTCTCAAAGCCGTTCAGCTTTGCTGGCATA  6600

GACTTACGCGTCTTGCGGCTGTTGGAAGCGGAAGAGTTCATGGCGGGAGA

GGAGACGTTAGAAGTAGACATGGTGGGGTTTGTTGACGGGTTTTGAGTAA  6700

CAAGAGACTTGCGTCGATCTTTGAGTGTTCTTGACAGAAAGTTATGCAAC

GTCGAC  6756
SalI
```

FIG.6G

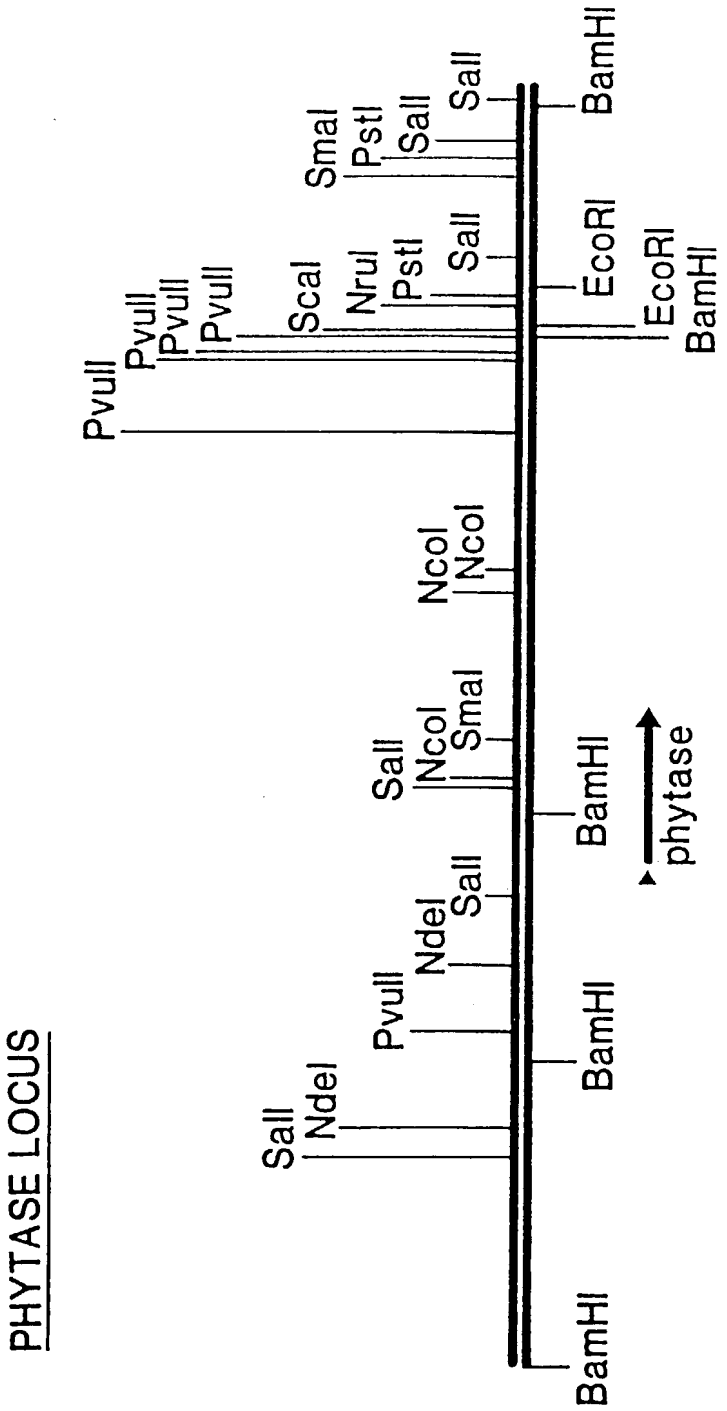


FIG.7

```
ATGGGCGTCTCTGCTGTTCTACTTCCTTTGTATCTCCTGTCTGGAGTCAC
 M  G  V  S  A  V  L  L  P  L  Y  L  L  S  G  V  T
-23      -20              '             -10

CTCCGGACTGGCAGTCCCCGCCTCGAGAAATCAATCCAGTTGCGATACGG      100
  S  G  L  A  V  P  A  S  R  N  Q  S  S  C  D  T
     '          -1 +1          '              10

TCGATCAGGGGTATCAATGCTTCTCCGAGACTTCGCATCTTTGGGGTCAA
V  D  Q  G  Y  Q  C  F  S  E  T  S  H  L  W  G  Q
          '             20              '

TACGCACCGTTCTTCTCTCTGGCAAACGAATCGGTCATCTCCCCTGAGGT      200
 Y  A  P  F  F  S  L  A  N  E  S  V  I  S  P  E  V
      30              '             40

GCCCGCCGGATGCAGAGTCACTTTCGCTCAGGTCCTCTCCCGTCATGGAG
  P  A  G  C  R  V  T  F  A  Q  V  L  S  R  H  G
  '             50              '             60

CGCGGTATCCGACCGACTCCAAGGGCAAGAAATACTCCGCTCTCATTGAG      300
A  R  Y  P  T  D  S  K  G  K  K  Y  S  A  L  I  E
          '             70              '

GAGATCCAGCAGAACGCGACCACCTTTGACGGAAAATATGCCTTCCTGAA
 E  I  Q  Q  N  A  T  T  F  D  G  K  Y  A  F  L  K
      80              '             90

GACATACAACTACAGCTTGGGTGCAGATGACCTGACTCCCTTCGGAGAAC      400
  T  Y  N  Y  S  L  G  A  D  D  L  T  P  F  G  E
  '             100             '             110

AGGAGCTAGTCAACTCCGGCATCAAGTTCTACCAGCGGTACGAATCGCTC
Q  E  L  V  N  S  G  I  K  F  Y  Q  R  Y  E  S  L
          '             120             '

ACAAGGAACATCGTTCCATTCATCCGATCCTCTGGCTCCAGCCGCGTGAT      500
 T  R  N  I  V  P  F  I  R  S  S  G  S  S  R  V  I
     130              '             140

CGCCTCCGGCAAGAAATTCATCGAGGGCTTCCAGAGCACCAAGCTGAAGG
  A  S  G  K  K  F  I  E  G  F  Q  S  T  K  L  K
  '             150             '             160

ATCCTCGTGCCCAGCCCGGCCAATCGTCGCCCAAGATCGACGTGGTCATT      600
D  P  R  A  Q  P  G  Q  S  S  P  K  I  D  V  V  I
          '             170             '

TCCGAGGCCAGCTCATCCAACAACACTCTCGACCCAGGCACCTGCACTGT
 S  E  A  S  S  S  N  N  T  L  D  P  G  T  C  T  V
     180              '             190

CTTCGAAGACAGCGAATTGGCCGATACCGTCGAAGCCAATTTCACCGCCA      700
  F  E  D  S  E  L  A  D  T  V  E  A  N  F  T  A
  '             200             '             210
```

FIG.8A

```
CGTTCGTCCCCTCCATTCGTCAACGTCTGGAGAACGACCTGTCCGGTGTG
T  F  V  P  S  I  R  Q  R  L  E  N  D  L  S  G  V
                  220

ACTCTCACAGACACAGAAGTGACCTACCTCATGGACATGTGCTCCTTCGA     800
 T  L  T  D  T  E  V  T  Y  L  M  D  M  C  S  F  D
    230                  240

CACCATCTCCACCAGCACCGTCGACACCAAGCTGTCCCCCTTCTGTGACC
  T  I  S  T  S  T  V  D  T  K  L  S  P  F  C  D
        250                  260

TGTTCACCCATGACGAATGGATCAACTACGACTACCTCCAGTCCTTGAAA     900
L  F  T  H  D  E  W  I  N  Y  D  Y  L  Q  S  L  K
                  270

AAGTATTACGGCCATGGTGCAGGTAACCCGCTCGGCCCGACCCAGGGCGT
 K  Y  Y  G  H  G  A  G  N  P  L  G  P  T  Q  G  V
    280                  290

CGGCTACGCTAACGAGCTCATCGCCCGTCTGACCCACTCGCCTGTCCACG    1000
  G  Y  A  N  E  L  I  A  R  L  T  H  S  P  V  H
        300                  310

ATGACACCAGTTCCAACCACACTTTGGACTCGAGCCCGGCTACCTTTCCG
D  D  T  S  S  N  H  T  L  D  S  S  P  A  T  F  P
                  320

CTCAACTCTACTCTCTACGCGGACTTTTCGCATGACAACGGCATCATCTC    1100
 L  N  S  T  L  Y  A  D  F  S  H  D  N  G  I  I  S
    330                  340

CATTCTCTTTGCTTTAGGTCTGTACAACGGCACTAAGCCGCTATCTACCA
  I  L  F  A  L  G  L  Y  N  G  T  K  P  L  S  T
        350                  360

CGACCGTGGAGAATATCACCCAGACAGATGGATTCTCGTCTGCTTGGACG    1200
T  T  V  E  N  I  T  Q  T  D  G  F  S  S  A  W  T
                  370

GTTCCGTTTGCTTCGCGTTTGTACGTCGAGATGATGCAGTGTCAGGCGGA
 V  P  F  A  S  R  L  Y  V  E  M  M  Q  C  Q  A  E
    380                  390

GCAGGAGCCGCTGGTCCGTGTCTTGGTTAATGATCGCGTTGTCCCGCTGC    1300
  Q  E  P  L  V  R  V  L  V  N  D  R  V  V  P  L
        400                  410

ATGGGTGTCCGGTTGATGCTTTGGGGAGATGTACCCGGGATAGCTTTGTG
H  G  C  P  V  D  A  L  G  R  C  T  R  D  S  F  V
                  420

AGGGGGTTGAGCTTTGCTAGATCTGGGGGTGATTGGGCGGAGTGTTTTGC    1400
 R  G  L  S  F  A  R  S  G  G  D  W  A  E  C  F  A
    430                  440

TTAG                                                   1404
```

FIG.8B

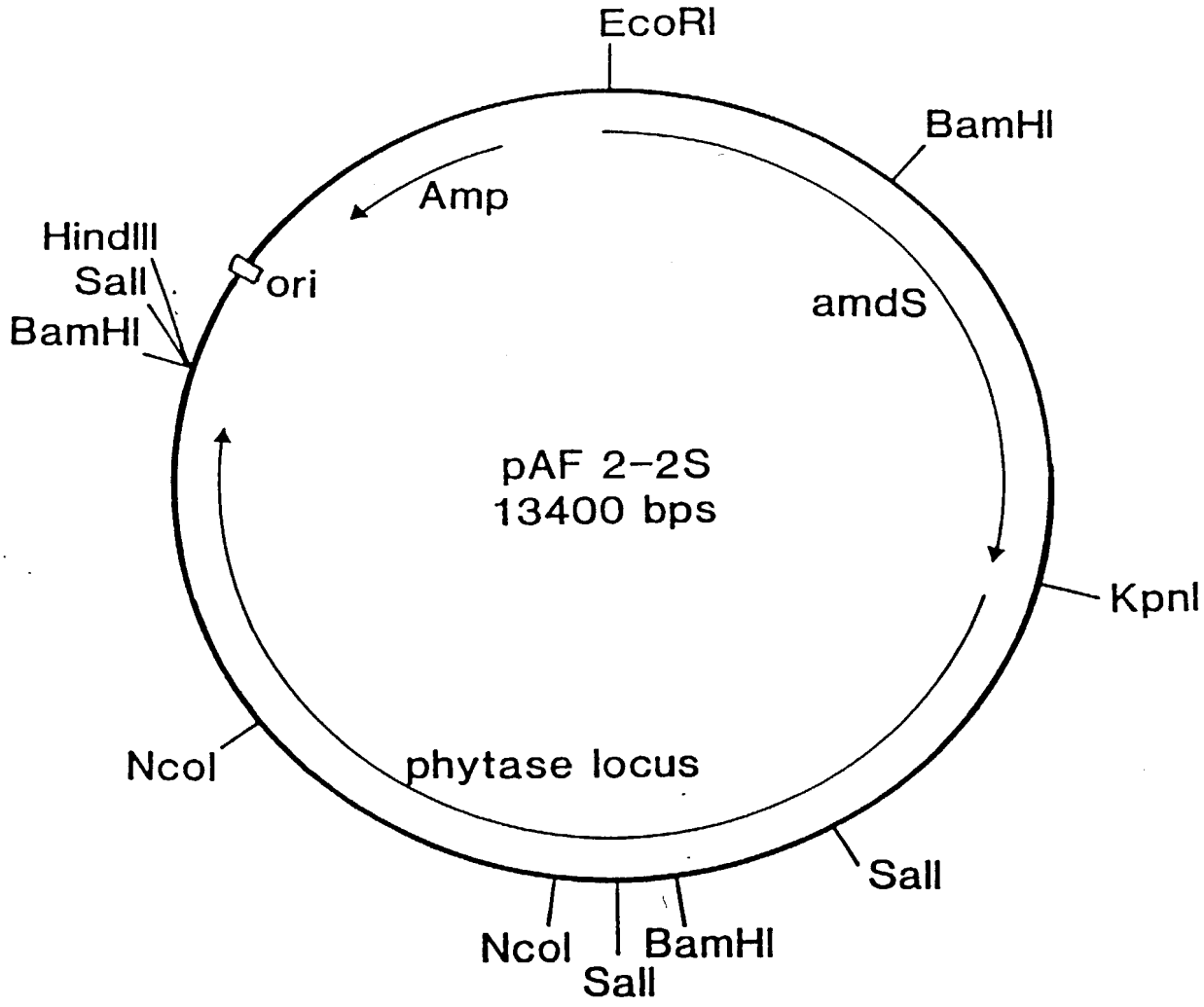


FIG.9

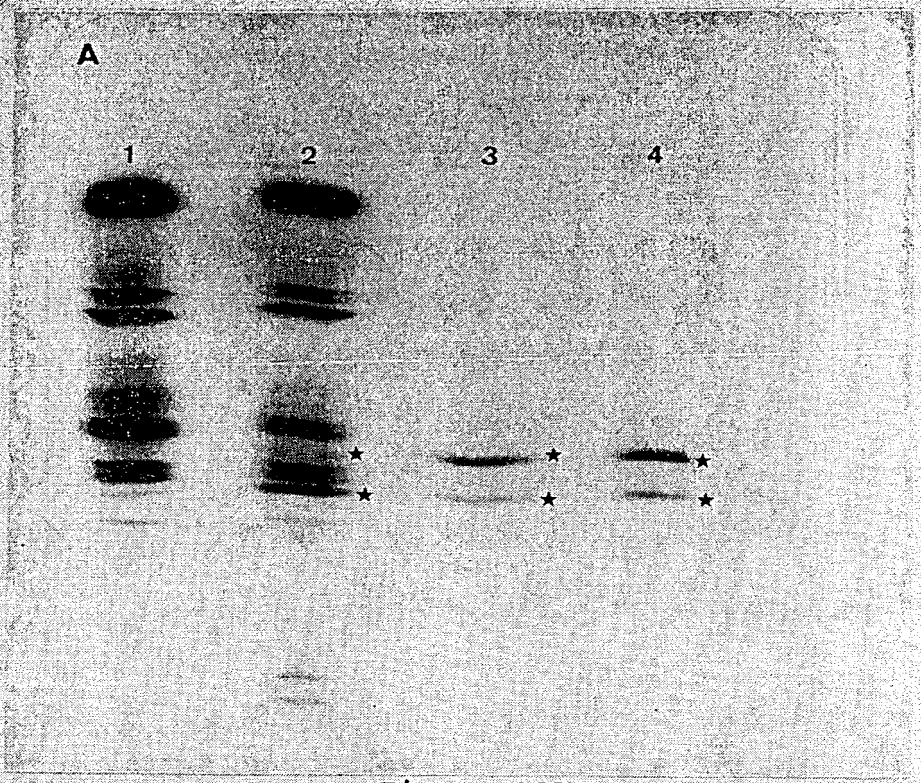


Figure 10A

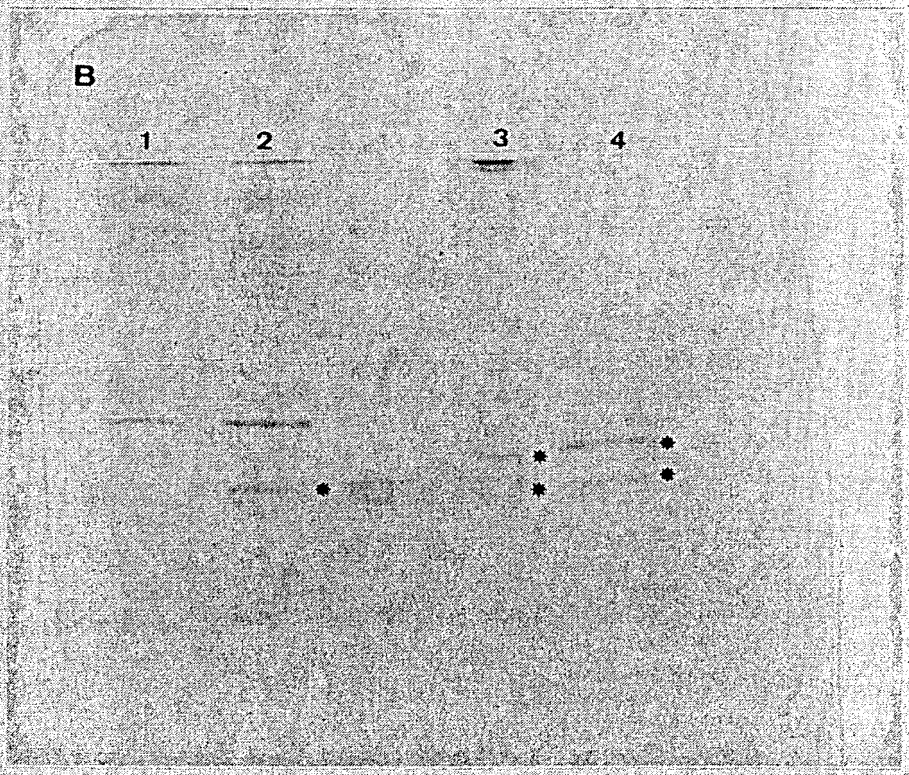


Figure 10B

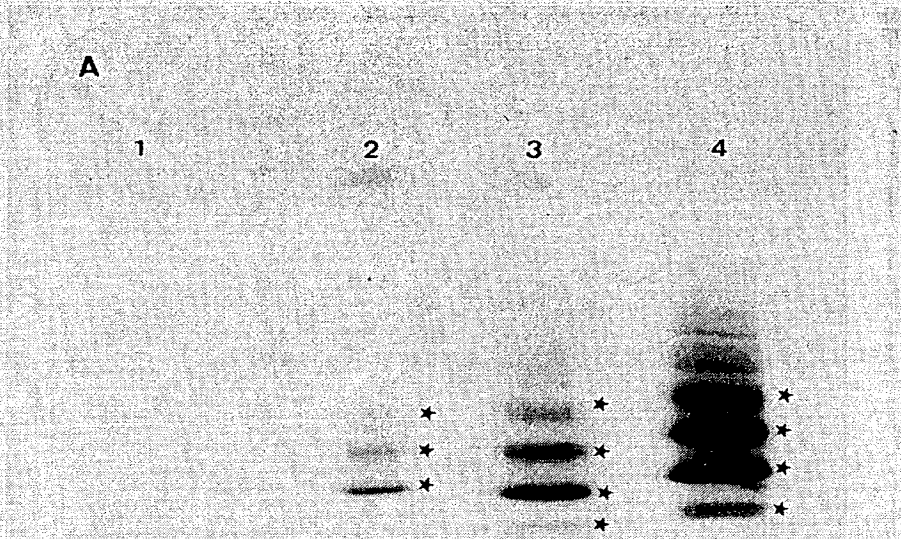


Figure 11A

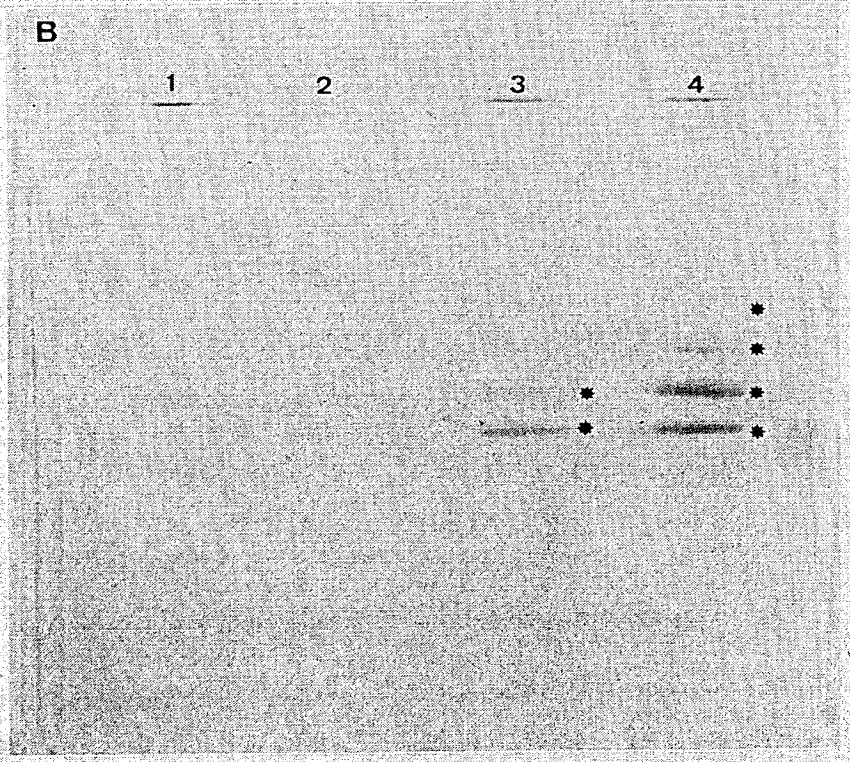


Figure 11B

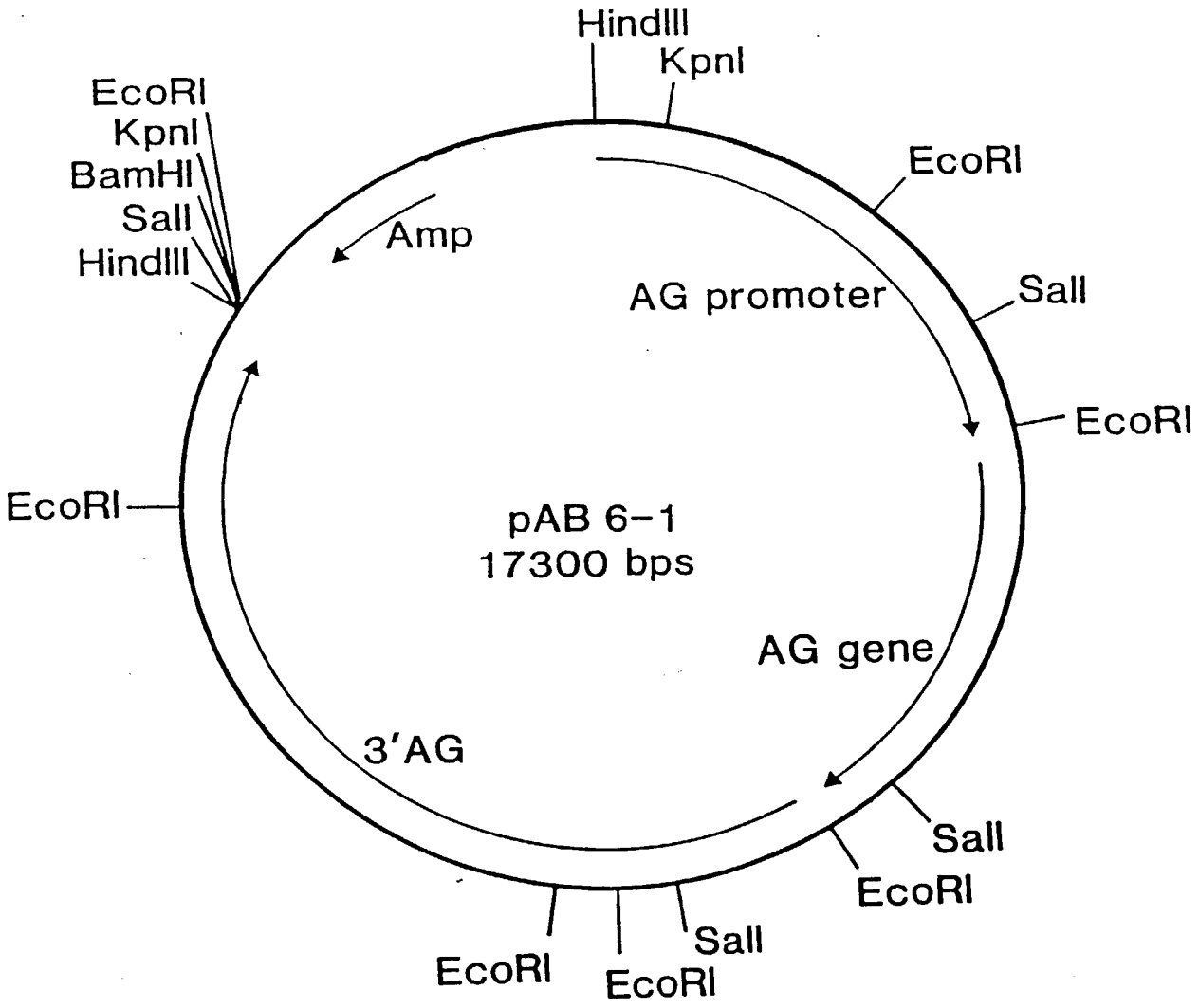


FIG. 12

AG/PHYTASE GENE FUSIONS BY PCR

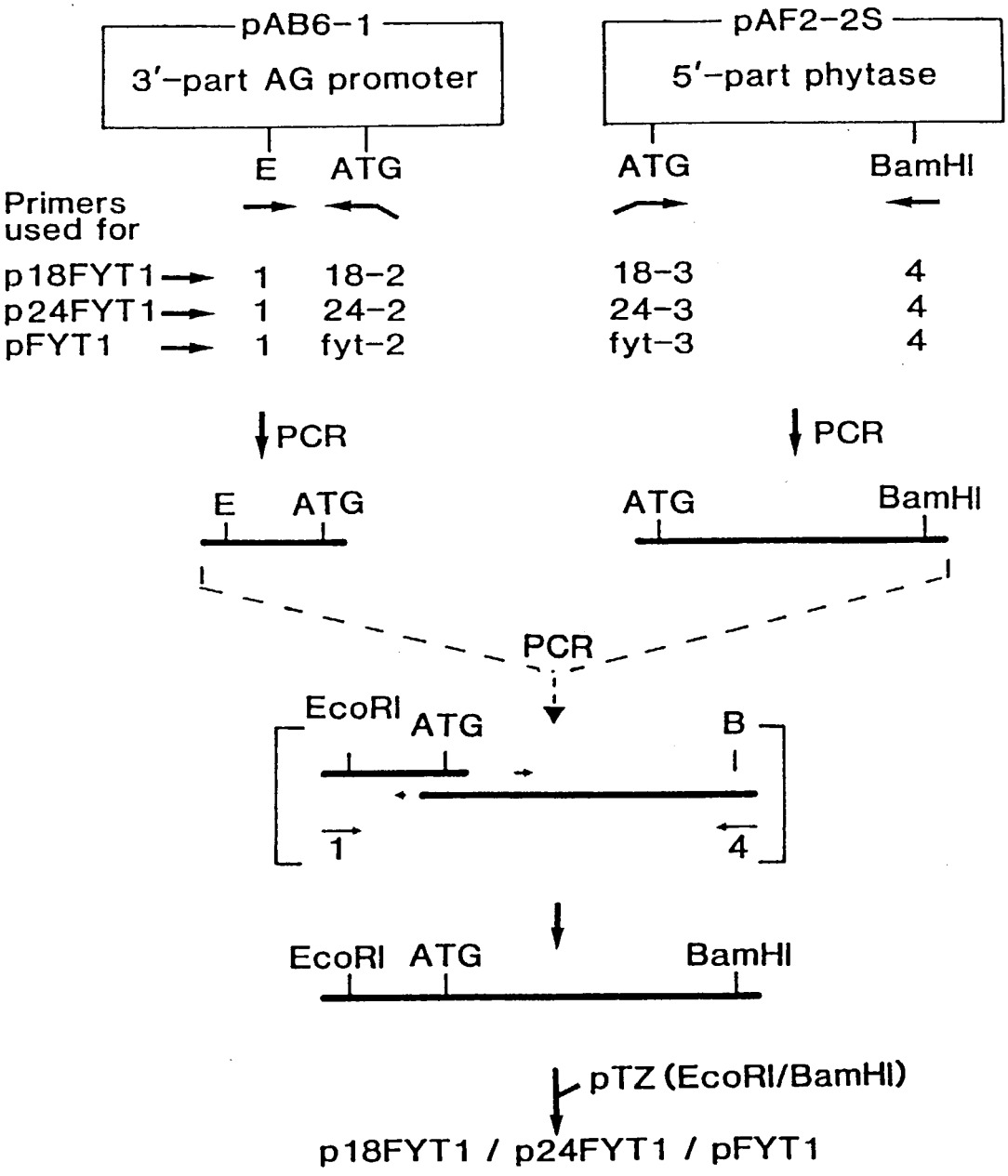


FIG. 13

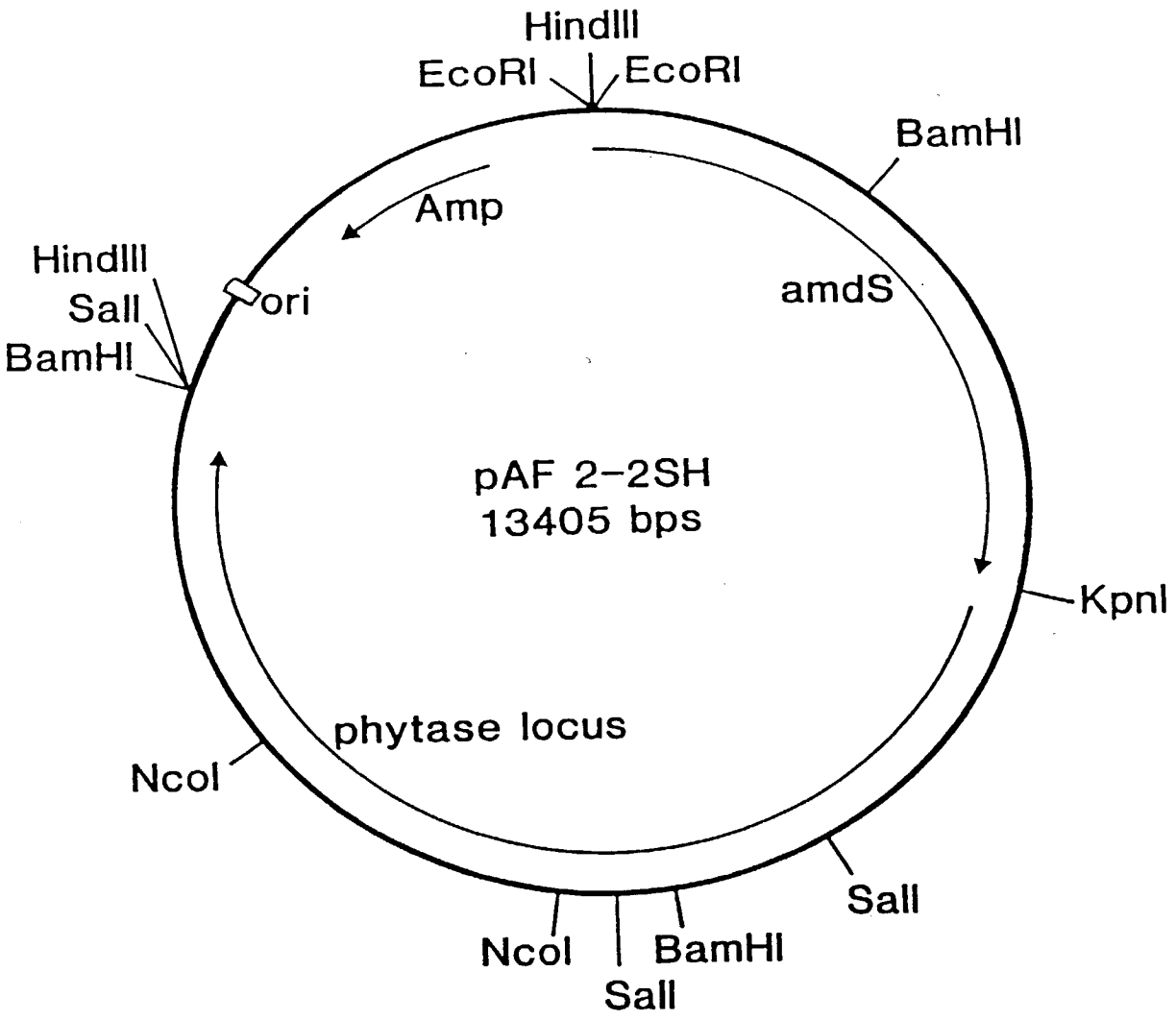


FIG. 14

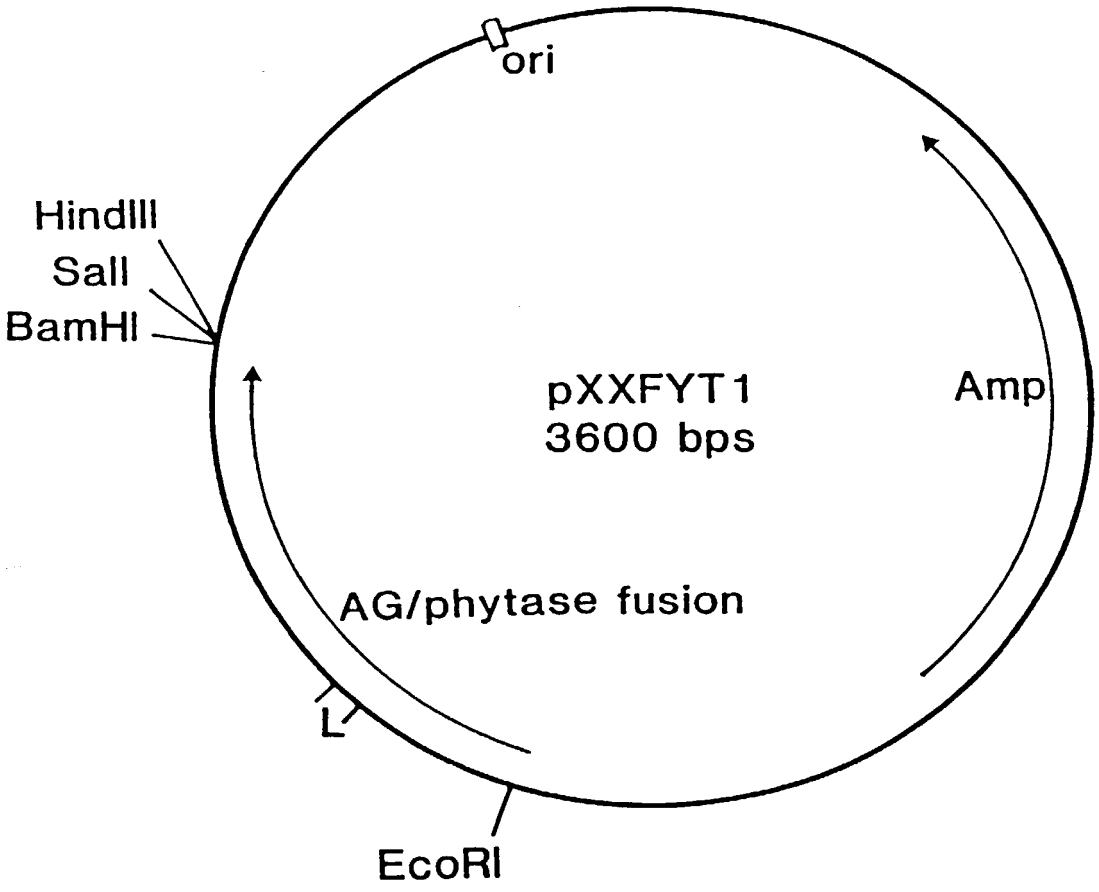


FIG. 15A

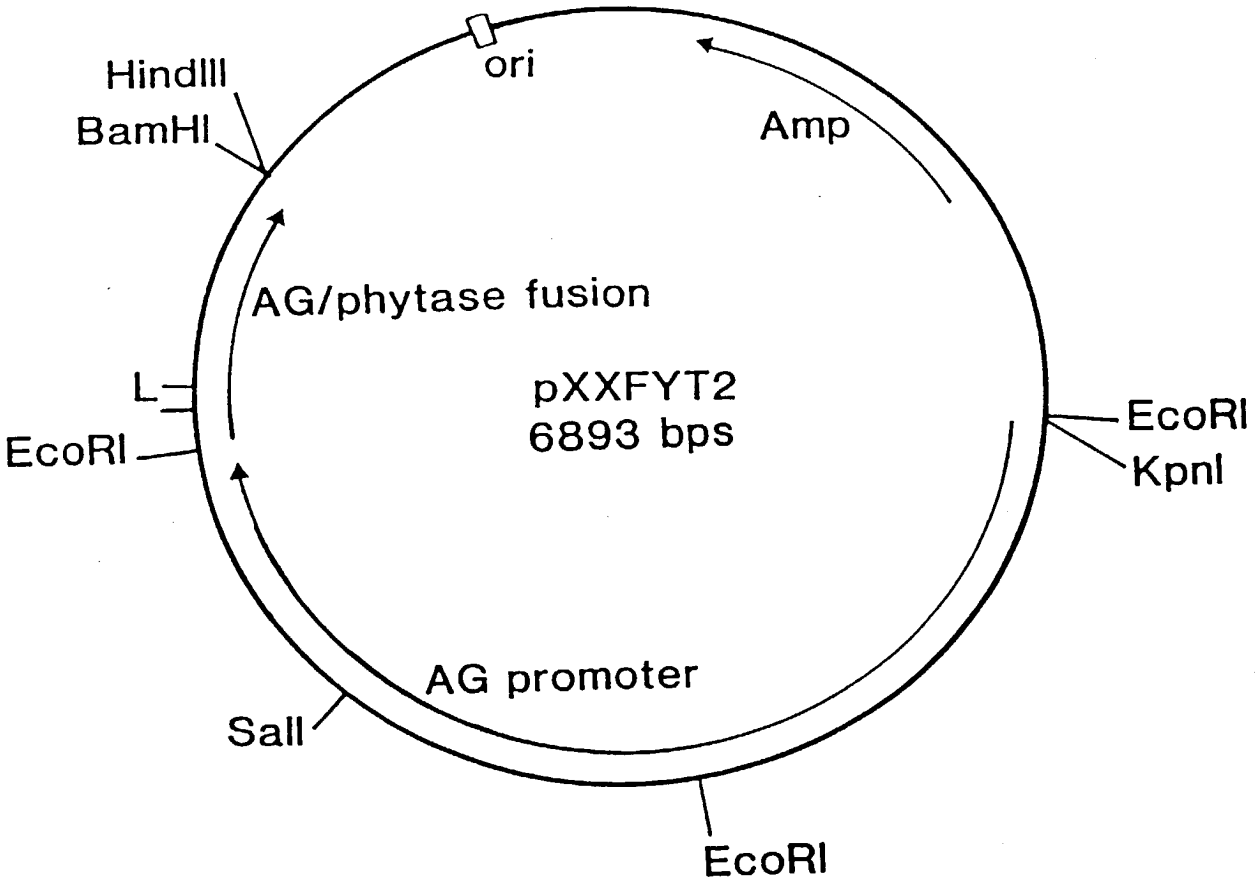


FIG. 15B

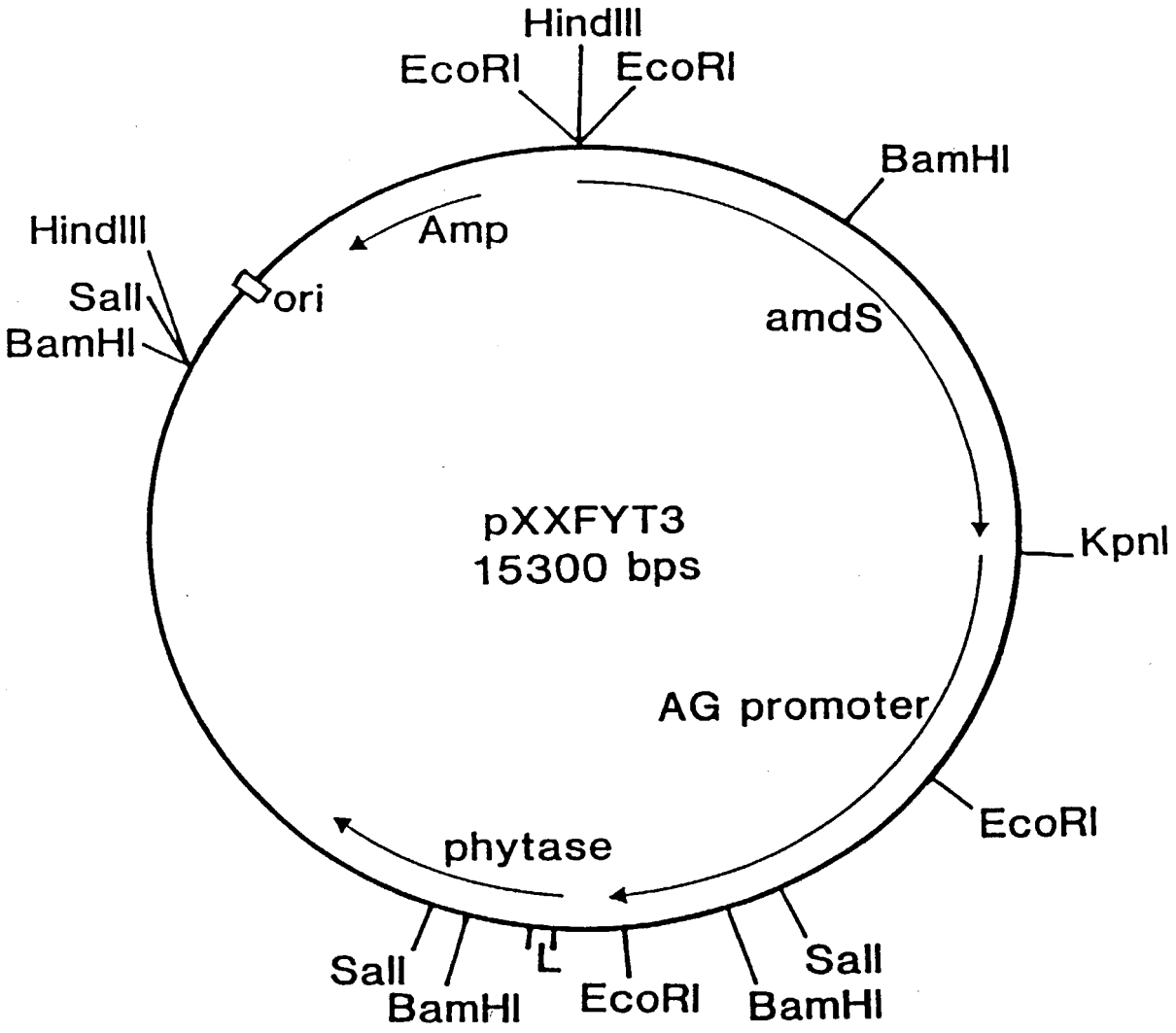


FIG. 15C

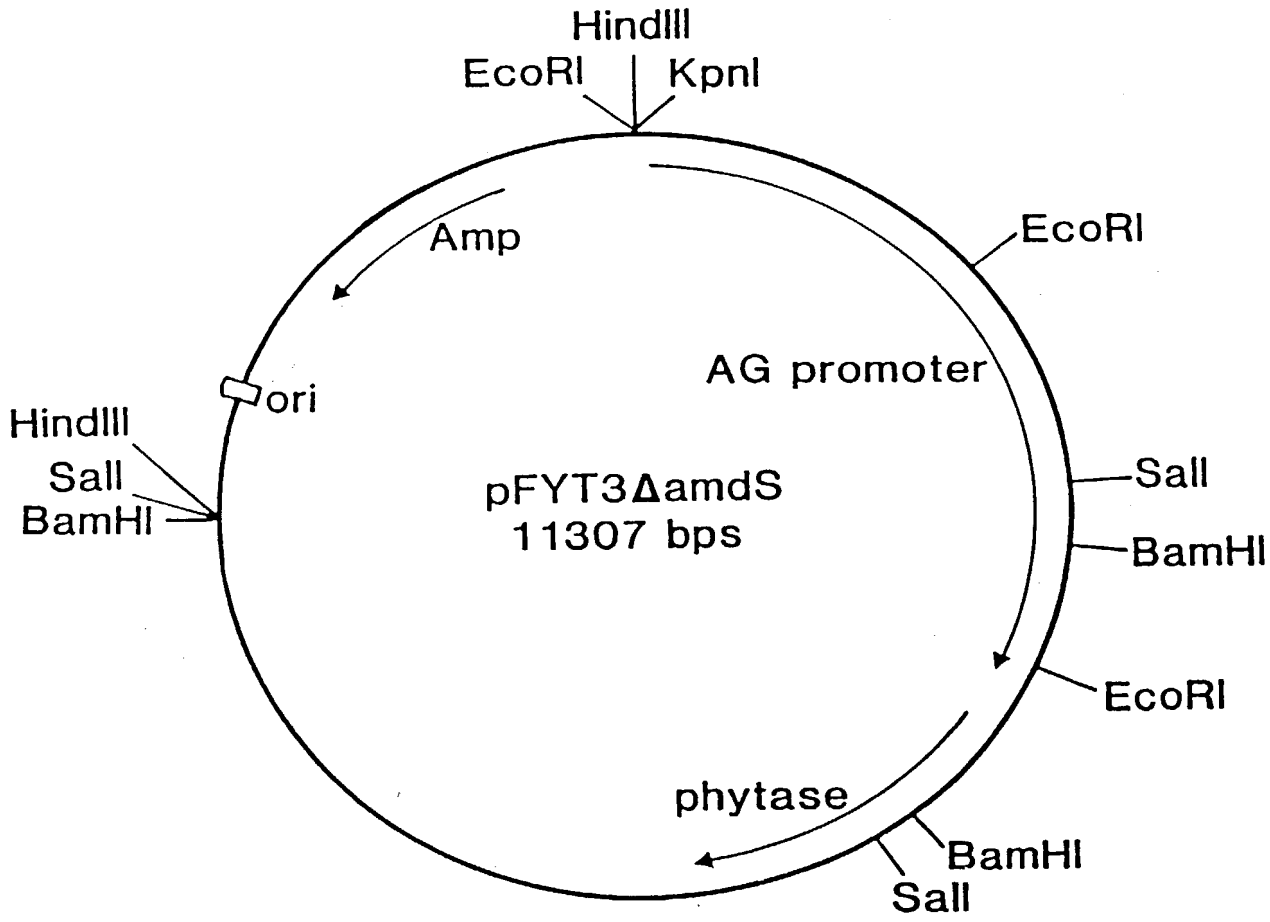


FIG. 16

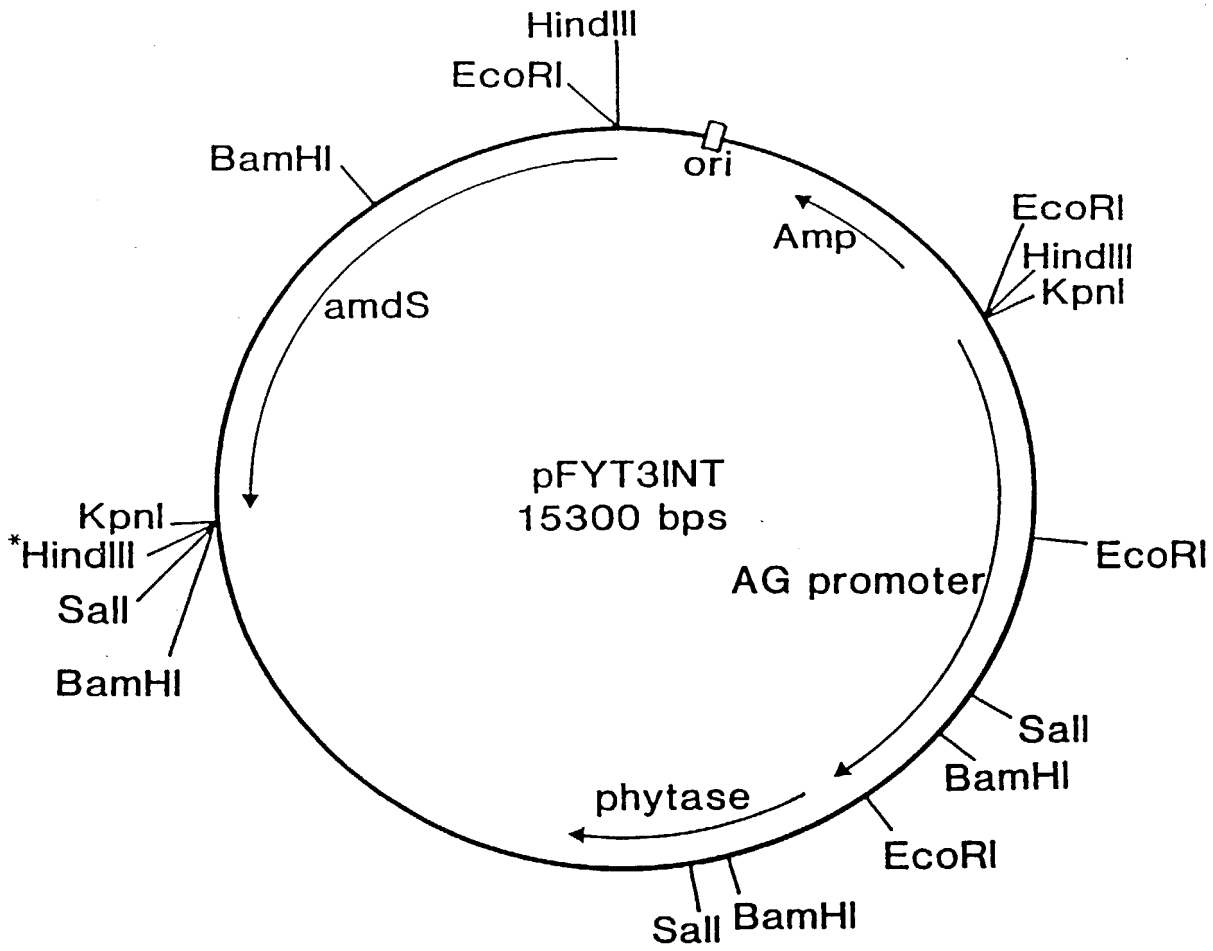


FIG. 17

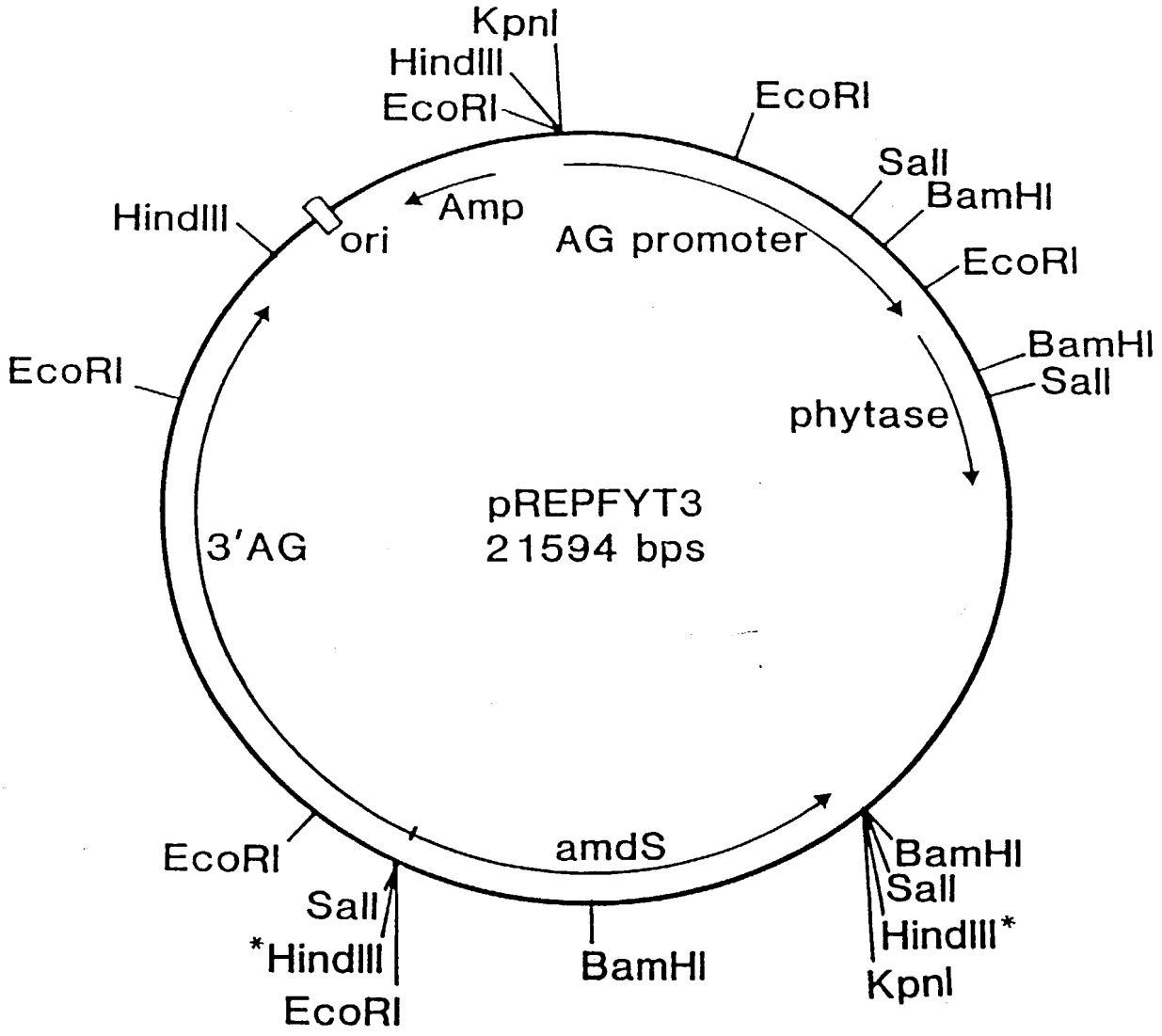


FIG. 18

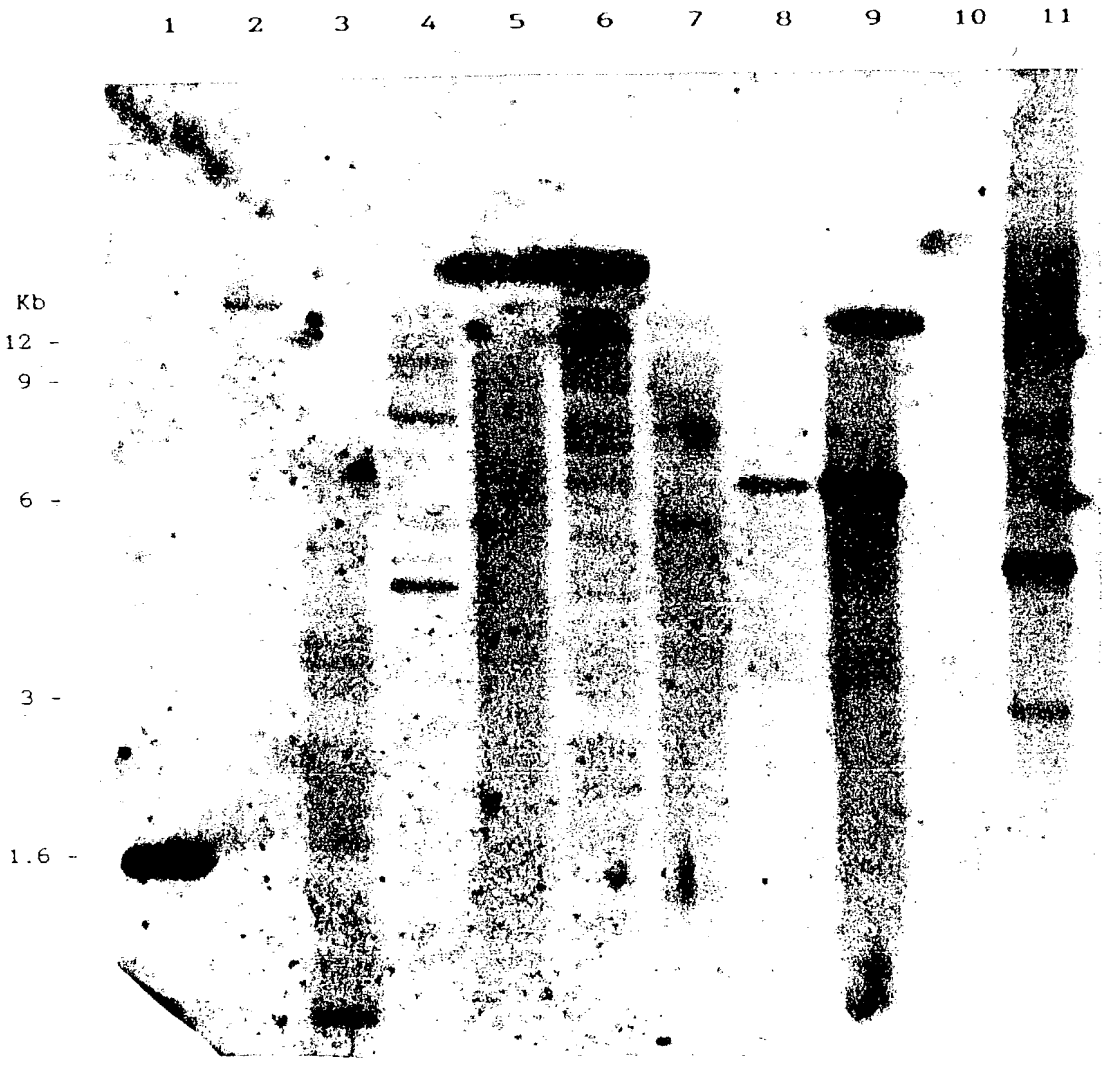


Figure 19A

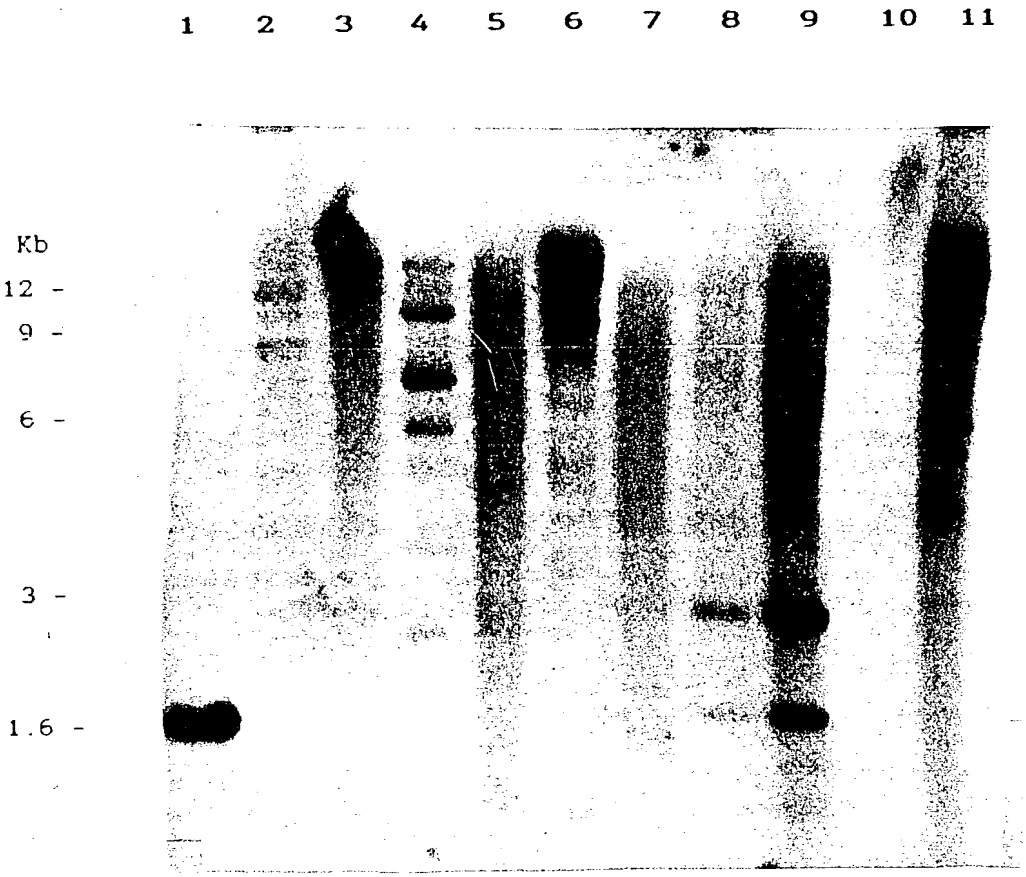


Figure 19B